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COMPUTERIZED HARVEST BARE ASSET MANAGEMENT PROTOTYPE
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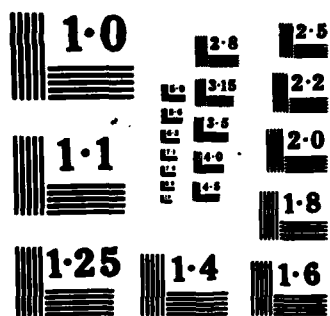
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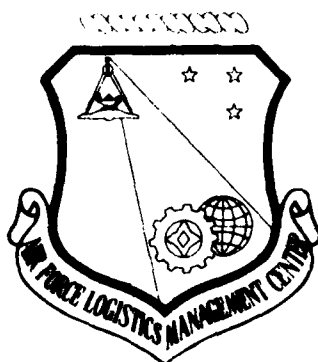




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AIR FORCE LOGISTICS MANAGEMENT CENTER

AD-A158 915



COMPUTERIZED HARVEST BARE ASSET
MANAGEMENT PROTOTYPE (CHAMP)

by

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AFLMC PROJECT XY110711-3
April 1984

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ABSTRACT

The purpose of this project was to develop an automated system to assist the logistics plans office of the 4449th Mobility Support Squadron manage Harvest Bare assets and rapidly develop deployment packages in response to higher headquarters tasking.

This report discusses how that was achieved and makes recommendations concerning automation requirements of other functional areas.

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EXECUTIVE SUMMARY

The 4449th Mobility Support Squadron (MOBSS) at Holloman AFB, NM, has a large (and increasing) inventory of mobility support equipment known as Harvest Bare. During the Worldwide Logistics Planners Conference in October 1981, the AFLMC was tasked by AF/LEX to develop an automation scheme to assist the MOBSS Logistics Plans office more effectively manage the assets and to provide more accurate and timely execution packages in support of deployment tasking. This was subsequently expanded to include a requirement for status reporting to higher headquarters.

After an initial analysis of existing procedures, an automation scheme was developed outlining a three-phased approach. Phase I consisted of initial system design, acquisition of commercially available microcomputer components and software, and AFLMC development of software for an expanded data base as well as procedures for timely execution of deployment packages. This was completed, installed, and operational in October 1982.

Phase II was the development of additional software for an automated capability to produce status reports for higher headquarters. This was installed and operational on 20 July 1983.

Phase III was further software development for internal MOBSS management reports and was operational on 15 January 1984, completing the scope and objectives of this project.

During the course of this project, other functional areas within the MOBSS identified several additional automation requirements which were far beyond the scope and objectives of this project. The requirements appear valid, however, and we recommend that the 4449th MOBSS request an analysis of their total automation requirements, the design of an automation scheme, and initiation of expanded system development. The AFLMC could be tasked or requested to assist in that effort.

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CHAPTER 1

THE PROBLEM

1-1 Background.

a. The 4449th Mobility Support Squadron (MOBSS) at Holloman AFB, NM, has a large inventory of mobility equipment known as Harvest Bare which is used to support various taskings. Some equipment is prepositioned at various locations, some is deployed, some is unavailable for use because of maintenance, and some may be located on-site in other than its usual storage location.

b. Tasking may take the form of OPlan support or support for a certain number of aircraft and/or personnel. Although support matrices were developed identifying equipment items and personnel types required for selected taskings, manually matching the tasked items against the inventory is a 90-plus-manhour endeavor. Moreover, that process may have to be reaccomplished, at least in part, if the inventory is not current or is inaccurate. For example, an item may be out of commission, not stored in its designated location, or otherwise mis-identified in the inventory.

c. Because of the large quantity of items in the inventory, and an increasing growth rate resulting from additional acquisitions, manual accounting and control of the inventory, as well as manual selection of items to support taskings, have become virtually impossible. In addition, as the sole manager of Harvest Bare assets for the Air Force, the 4449th MOBSS has some very unique requirements and problems. Current standard automation systems, primarily designed to support flying missions, do not contain all of the necessary data to fulfill requirements; nor do they possess the flexibility to have such data added.

1-2 Problem Statement.

a. At the Worldwide Logistics Planners Conference in October, 1981, a representative from the 4449th MOBSS briefed the necessity for an automated system to generate support packages in response to higher headquarters tasking. The size of the inventory they had to manage was growing rapidly and the frequency of taskings was on the rise. In addition, they were also receiving an increasing number of requests for assessments of their ability to support particular scenarios.

b. HQ USAF/LEX asked the AFLMC to review the situation and, if possible, develop an automation scheme to provide more accurate and timely execution packages in support of deployment tasking. This was subsequently expanded to include a requirement for status reporting to higher headquarters.

1-3 Factors Bearing on the Problem. The primary factor was the requirement to provide as much assistance and relief in the shortest possible time. This directly affected the approach taken.

CHAPTER 2

RESEARCH AND DEVELOPMENT

2-1 Research. In November 1981, the AFLMC project team visited the 4449th MOBSS to analyze the situation. As a result of that analysis, initial LGX requirements were identified, and an automation scheme proposed. In researching and analyzing the situation at the 4449th, several alternatives were considered.

a. No additional automation. Instead of automatically assuming that new automation capabilities were required, initial consideration was given to resolving the problem through better utilization of existing systems. For example, the 4449th MOBSS is required to maintain the Contingency Operation/Mobility Planning and Execution System (COMPES). Therefore, COMPES was evaluated as a possible tool for developing deployment "packages." This alternative was rejected because the COMPES data base does not contain many of the data elements necessary to identify mission capable equipment, location, etc. In addition, COMPES uses a "batch processing" mode making it unsuitable for reacting to tasking in a timely manner.

b. Expansion of Existing Systems. Holloman AFB has a Standard Base Supply System on the U-1050-II computer as well as the Burroughs B3500/3700 computer for other data processing functions, including COMPES. The feasibility of expanding those systems to include additional data elements required by the 4449th was evaluated and rejected. Neither system has sufficient additional capacity and modifying them to add the additional features would be a monumental task. In addition, their batch mode operation could not support the responsiveness requirements of the 4449th MOBSS.

c. Install a Mini-Computer. The 4449th MOBSS had tentatively identified an IBM System 34 that was to be declared excess by Bergstrom AFB, TX. This machine was larger than required by the MOBSS, was not available in the time frame necessary for program development, and was not the least cost alternative.

d. Acquire an off-the-shelf microcomputer. Commercially available hardware and software were sufficient to satisfy the CHAMP requirements. Acquisition costs were low enough to make this alternative the least cost approach.

2-2 Approach.

a. Because of the necessity to provide some improved capability as soon as possible, a three-phased approach was recommended based on the alternative in paragraph 2-1 d, above. This proposal was briefed to the AFLMC Board of Advisors (BOA) in January 1982, and approved.

b. Required automated data processing documentation was generated and a project plan developed. Phase I consisted of:

- (1) Refining and finalizing the automation scheme.
- (2) Approval by HQ TAC/AD of the Projected Automation Requirement

(PAR).

- (3) Designing the architecture for the automated inventory data base.
- (4) Selecting candidate hardware components available from commercial sources.
- (5) Acquiring system hardware.
- (6) Developing software in-house to automate the development of deployment packages.

c. The completion of Phase I in October 1982, provided the 4449th MOBSS with an automated data base and tasking matrices and a capability to rapidly select equipment items to fulfill specific deployment taskings. The computer accomplishes this by matching the selected matrix against a current data base and selecting only items that are mission capable.

d. Phase II was the development of additional software for an automated capability to produce status reports to satisfy higher headquarters requirements. Refinements to Phase I software were also accomplished during this period. Phase II software was installed and operational on 20 July 1983.

e. Phase III consisted of further software development to provide internal management products to the 4449th MOBSS and was operational on 15 January 1984. In addition, Phase I software was further enhanced to satisfy additional requirements identified by the 4449th. These included a capability enabling the operator to tailor the standard matrices and adjust for specific locations; the capability to substitute specific, manually-selected items for items automatically selected by the computer; and, the addition of comment fields in the tasking matrices. Also during this period, the user's manual was refined and finalized, and full program documentation was prepared. This will enable system maintenance without continuing AFLMC involvement.

2-3 Results. Completion of CHAMP has resulted in the following:

a. The 4449th MOBSS now has a unique inventory data base consisting of data elements not available in any existing standard system.

b. Standard, "generic," tasking matrices have been developed and are resident on floppy disks.

c. Matrices can be used "as is," or tailored to reflect conditions at specific locations. For example, when the 4449th was tasked to support the landing of the space shuttle at White Sands, NM, they started with a generic matrix designed to support strategic aircraft and tailored it to account for conditions and facilities available at White Sands. The shuttle support package was completed in less than 30 minutes.

d. System hardware was obtained in minimal time by using readily available commercial equipment. Specific system components are:

- (1) Dynabyte 5710 Central Processing Unit with a hard disk and tape cartridge backup capability.
- (2) Dynabyte 5010 floppy disk drive (dual 8" diskettes).
- (3) Hazeltine ESPRIT terminals.
- (4) Mannesman Tally printer.

e. The 4449th has been able to reduce the 90-plus manhours required to respond to higher headquarters tasking to less than an hour and, in some cases, to a matter of minutes.

f. The success of CHAMP in supporting the LGX function has generated interest in other 4449th functional areas concerning the benefits of automation. This has led to the identification of numerous other requirements in other areas which far exceed the original objectives of CHAMP.

2-4 Economic Analyses. Although an "economic analysis," per se, was never performed on CHAMP, the reduction from 90-plus manhours to less than an hour in developing deployment packages speaks for itself. Just as important, the accuracy and expansion of the data base, which is essential under CHAMP, has provided the 4449th MOBSS with an accessibility to essential information that, previously, was not readily available.

CHAPTER 3

DOCUMENTATION

CHAMP system documents including a program maintenance manual, source code listings, and user's guide are available as AFLMC Project Reports XY110711DV-3-01, -02, and -03, respectively.

CHAPTER 4

CONCLUSIONS

The implementation and operation of the CHAMP system has significantly enhanced the capability of the 4449th MOBSS to manage the Air Force Harvest Bare assets and to respond to higher headquarters tasking. Moreover, the success experienced by the Logistics Plans function through the implementation of CHAMP has generated extensive interest among other functional areas concerning the benefits of automation.

CHAPTER 5
RECOMMENDATIONS

5-1 CHAMP. The original objectives of this project have been accomplished and, in some areas, exceeded. Therefore, CHAMP is considered to be completed. However, the following recommendations are made concerning hardware and software.

- a. HQ TAC should assume ownership of the hardware. (OPR: HQ TAC/LGX)
- b. HQ TAC should assume responsibility for system maintenance, including software. (OPR: HQ TAC/LGX; OCR: HQ TAC/AD)
- c. The 4449th MOBSS, through the Holloman DPI, 12AF, and HQ TAC, has initiated action to replace the Hazeltine ESPRIT terminals and Mannesman Tally printers with Beehive and Data South machines, respectively. This will make the CHAMP hardware compatible with existing maintenance agreements at Holloman thereby simplifying maintenance support, and that effort should continue. (OPR: 4449th MOBSS/LGX)
- d. The AFLMC should remain in a consulting role to assist in system maintenance for a period of six months. This should provide sufficient time for TAC to assume total responsibility. (OPR: AFLMC/LGY)

5-2 Other Functions. Since the development system was shipped to the 4449th MOBSS at the completion of Phase III, any requests for on-site support during the transition period will be addressed on a case-by-case basis. The success of CHAMP generated extensive interest among other functional areas at the 4449th MOBSS, and resulted in a sizeable list of additional requirements (or desires). Since they greatly exceeded the scope and objectives of CHAMP, they could not be included under this project and have not been addressed in any detail in this report. However, a cursory evaluation indicated that most, if not all, appear to be valid requirements that could significantly benefit the 4449th MOBSS by improving overall efficiency in the management of Harvest Bare assets. Therefore, the 4449th MOBSS should request that an analysis of their total automation requirements beyond CHAMP be performed. (OPR: 4449th MOBSS/CC; OCR: HQ TAC/LGX)